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A NEW SPECIES OF GIANT LIMA FROM OFF SOUTHERN CALIFORNIA (MOLLUSCA: PELECYPODA)

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A specimen of a large pelecypod, belonging to the genus *Lima*, was forwarded to me for identification by Mr. Gale Sphon, Jr., of the Department of Conchology, Santa Barbara Museum of Natural History. This specimen was collected by John Tennant on the drag boat *Christine*, between Santa Catalina and Santa Barbara Islands, California, in 457-549 meters (250-300 fathoms).

Several species of giant limas, Recent and fossil, described from western North America, were mentioned by me in an earlier paper, in which *Lima (Acesta) mori* was described from off central California. The present shell from southern California is quite distinct from that of any described west American species. Apparently its closest relative lives in Japanese waters.

In a recent paper dealing with the Cenozoic giant representatives of the family Limidae, Vokes (1963) discussed 14 Recent and 33 fossil species and subspecies. Of these, he referred 13 Recent and 30 Tertiary forms to the subgenus *Acesta* H. and A. Adams. He assigned one Recent and three Tertiary species (one doubtfully) to the subgenus *Plicacesta* Vokes. Two additional Recent species of the large limas mentioned by Vokes were not assigned to any subgenus.

A search of the literature convinced me that the species represented by the shell from southern California was new to science and Mr. Sphon gener-

ously proposed that I describe it. I take pleasure in naming this new species in his honor.

Five species of giant limas, three of the subgenus *Acesta* and one (described in the present paper) belonging to the subgenus *Plicacesta*, and one not assigned to a subgenus, are now known to be living in eastern Pacific waters.

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Family Limidae

Genus Lima Bruguière

Lima Bruguière, Tabl. Encycl. Méthod., Vers Test. Coq., pl. 206, 1797. [The name *Lima* appears only in the legend on the plate. Figures of six shells, undescribed, were illustrated.] Stewart, Acad. Nat. Sci. Philadelphia, Spec. Publ. no. 3, p. 124, August 9, 1930. [Discussion of genus name *Lima* and its type species.] Vokes, Tulane Studies in Geol., vol. 1, no. 2, p. 75, 1963. "Type species, by subsequent tautonomy (Lamarck, 1801) *Ostrea lima* Linnaeus, 1758 = *Lima squamosa* Lamarck, 1801; Recent, apparently world-wide in warmer waters..."

Lima Cuvier, Tabl. Elém., p. 421, 1798. Sole species, *Lima alba* Cuvier [= *Ostrea lima* Linnaeus, 1758].

Vokes (1963, p. 75) recently discussed the authority for the genus name *Lima* and its type species.

Subgenus Plicacesta Vokes

Plicacesta Vokes, Tulane Studies in Geol., vol. 1, no. 2, p. 90, January 18, 1963. "Type species, *Lima smithi* Sowerby, 1888."

Type species (by original designation): *Lima smithi* Sowerby, Proc. Zool. Soc. London for 1888, p. 207, pl. 11, fig. 12, August, 1888. "Japan." Also illustrated by Thiele, Syst. Conchyl.-Cab. von Martini und Chemnitz, Bd. 7, Abt. 2a, p. 21, pl. 4, figs. 1, 2, 1918 [as *Lima (Acesta) smithi*]. Oyama, Conch. Asiatica, vol. 1, pt. 1, p. 45, pl. 4, figs. 3a, 3b; pl. 14, fig. 11, 1943 [as *Lima (Acesta) smithi*].

Range. Eocene to Recent. Recent in Japan and California, at depths of 115 to 669 meters.

Remarks. The relatively thin shell, cardinal area, and ligamental pit of this subgenus are similar to those of the subgenus *Acesta* H. and A. Adams. The shell of *Plicacesta*, however, is plicated by strong radial ribs which are especially well developed on the medial portion of the valves. The corresponding portion of the dorsal half of the shell of *Acesta* is usually weakly ribbed or nearly smooth.

Lima (Plicacesta) sphoni Hertlein, new species.

(Figures 1, 2, 3.)

Description. Shell large, thin, ovate, equivalve, inequilateral, covered with a thin pale brown periostracum; hinge line straight, moderately long, with a slightly oblique ligamental pit in the narrow, very broadly triangular cardinal area; beaks anterior, low, somewhat decorticated; anteriorly the valves slope steeply from the umbos to the margin where a depressed lunular area is present, and there is a decided gape between the valves; posteriorly the valves slope gently to the margin; the remainder of the margins are evenly ovate, arcuate; sculpture consists of about 52 rounded radial ribs and near the anterior margin 3 additional ones separated from the others by a wide space; most of the ribs are separated by interspaces a little wider than the ribs, especially on the posterior portion of the valves where the interspaces are 3 mm. wide; concentric sculpture consists of lines of growth which give rise to faint rugosities where they cross the ribs; 4 or 5 fine concentric offsets on the ribs indicate resting stages. Interior of the shell polished, white, corrugated conforming to the exterior ribbing, margin very slightly notched by the ribs; muscle impressions rounded, faintly visible; hinge with a shallow pit at the anterior end. Dimensions: height (beak to base), 114 mm.; length (anterior-posterior), 91 mm.; convexity (both valves together), 56.5 mm.; anterior slope (approximately 38 mm.; anterior gape about 35 mm.; maximum width of gape, 3 mm.

Holotype. Catalogue no. 03183, Santa Barbara Museum of Natural History, Department of Conchology. From between Santa Catalina and Santa Barbara Islands, California, in 457-549 meters (250-300 fathoms); John Tennant, collector, on the drag boat *Christine*.

Remarks. This new species bears a resemblance to *Lima smithi* Sowerby, the type species of the subgenus *Plicacesta*, which was described from Japan. The dimensions given by Sowerby were 63 mm. high and 51 mm. long.

Lima (Plicacesta) sphoni, new species differs from *L. (P.) smithi* in the proportionately shorter straight anterior margin below the anterior auricle, the more expanded posterior dorsal area, and especially in the more numerous ribs, 55 rather than 40. Furthermore, the ribs are more widely spaced on the posterior portion of the shell of the new species.

Figure 1. *Lima (Plicacesta) sphoni* Hertlein, new species. View of the exterior of the right valve of the holotype. Height (beak to base), 114 mm. From between Santa Catalina Island and Santa Barbara Island, California, in 457-549 meters (250-300 fathoms).

Oyama (1943, p. 49) pointed out that the species referred to "*Lima (Callolima) smithi*" by Bartsch (1913, p. 236) is referable to *Lima (Acesta) philippinensis* Bartsch (1913, p. 237, pls. 14 and 15).

It appears that the description by Pilsbry (1895, p. 142) which was supposed to apply to *Lima smithi*, also is referable to another species. In that description the anterior end is mistakenly referred to the posterior and the medial portion of the dorsal half of the shell is described as smooth.

Another species bearing a general resemblance to both *Lima (Plicacesta) smithi* and to the new species, *L. (P.) sphoni*, is *Lima (Plicacesta) amaxensis* Yokoyama (see Oyama, 1943, p. 43, pl. 5, fig. 1) which was described from beds of late Eocene age in the Miike coal field in Kyushu, Japan. The shell of the species described by Yokoyama is wider in proportion to the height than that of either of the species mentioned above.

Figure 2. *Lima (Plicacesta) sphoni* Hertlein, new species. View of the interior of the specimen shown in figure 1.

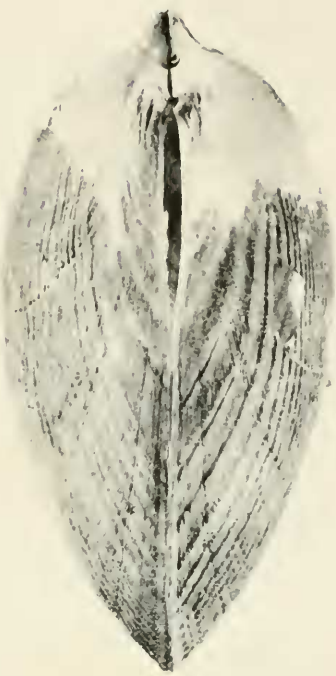

Figure 3. *Lima (Plicacesta) sphoni* Hertlein, new species. View of the anterior end of the holotype showing the byssal gape.

REFERENCES

BARTSCH, P.

1913. The giant species of the molluscan genus *Lima* obtained in Philippine and adjacent waters. Proceedings of the United States National Museum, vol. 45, no. 1978, pp. 235-240, pls. 12-20, June 13.

DALL, W. H.

1902. Notes on the giant limas. Nautilus, vol. 16, no. 1, pp. 15-17, May.

1908. Reports on the dredging operations off the west coast of Central America to the Galapagos, to the west coast of Mexico, and in the Gulf of California...XIV. The Mollusca and the Brachiopoda. Bulletin of the Museum of Comparative Zoölogy of Harvard College, vol. 43, no. 6, pp. 205-487, pls. 1-22, October.

HERTLEIN, L. G.

1952. Description of a new pelecypod of the genus *Lima* from deep water off Central California. Proceedings of the California Academy of Sciences, Fourth Ser., vol. 27, no. 12, pp. 377-381, pl. 20, figs. 12, 13, July 11.

Oyama, K.
1943. Familia Limidae. Conchologia Asiatica, volume primum, pars prima, pp. 1-74, pls. 1-14, 12 figs. in text. [Placed on sale November 20, 1943].

Pilsbry, H. A.
1895. Catalogue of the marine mollusks of Japan, with descriptions of new species and notes on others collected by Frederick Stearns. Published by Frederick Stearns, Detroit, pp. I-VIII, 1-196, pls. 1-11.

Sowerby, G.B. (Third of name)
1888. Descriptions of sixteen new species of shells. Proceedings of the Zoological Society of London for 1888, pp. 207-213, pl. 11, August. [Indicated as March 20 but according to Duncan (Proc. Zool. Soc. London, vol. 107, ser. A, pt. 1, p. 74, 1937), pages 141-247 were issued in August, 1888.]

Teppner, W. von
1914. Fossilium Catalogus, 1: Animalia. Editus a F. Frech. Pars 2: Lamellibranchiata tertiaria, "Anisomyaria", 1 (W. Junk: Berlin). F. Limidae d'Orbigny, pp. 24-49.

Thiele, J.
1918-1920. Familia Limidae. Systematisches Conchylien-Cabinet von Martini und Chemnitz, Band 7, Abt. 2a, pp. 1-66, pls. 1-10. [Concerning the dates of issue of this monograph see Iredale, T., British Museum (Natural History), Great Barrier Reef Expedition, 1928-29, Scientific Reports, vol. 5, no. 6, Mollusca, pt. 1, p. 382 (footnote), 1939.]

Vokes, H. E.
1963. Studies on Tertiary and Recent giant Limidae. Tulane Studies in Geology, vol. 1, no. 2, pp. 73-92, pls. 1 and 2, January 18.